




**ADDENDUM 001  
REQUEST FOR BIDS**

**RFB 5-110330FR**

**Installation of Externally Bonded Fiber Reinforced Polymer (FRP)  
Composite System to Strengthen Cast-In-Place Concrete Piles**

Bidders should acknowledge receipt of Addendum 001 (ONE) by signing and including it with the original bid. The due date for receipt of bids remains unchanged by this Addendum.

Accordingly, the attached ***“Question and Answer Addendum”*** is believed to be of general interest to all potential Bidders. All other terms and conditions remain unchanged and in full force.

<b>OFFEROR'S FIRM NAME:</b>  _____  _____  Name and Title of Signer (Print or type)	<b>Name and Title of Department Authority:</b>  Frankie J. Ryan, MPA, CPPO, CPPB Senior Procurement Agent  Missouri Department of Transportation
_____  (Signature of person authorized to sign)	 Frankie J. Ryan, MPA, CPPO, CPPB Senior Procurement Agent General Services Procurement Email: <a href="mailto:Frankie.Ryan@modot.mo.gov">Frankie.Ryan@modot.mo.gov</a>  (Authorizing Signature)
Date Signed:	Date Signed: March 17, 2011

## QUESTION AND ANSWER ADDENDUM

**Question 1:** Section 2.1.2 of the specifications state that Bent 33/Column 1, Bent 33/Column 2, Bent 33/Column 3, and Bent 33/Column 4 are to receive glass fabric reinforcing. Section 5.2.1 states that the FRP system shall be designed to provide the equivalent capacity associated with 50% section loss of #4 stirrups at 1.5" o.c. within the stated repair areas. Due to creep-rupture issues associated with sustained loads over time, the use of glass fabric for strengthening purposes is typically not recommended. Section 4.4.1 of ACI440.2R-08 discusses this phenomenon in further detail.

1. Is the glass fabric specified for these columns expected to provide sustained shear load resistance? If so we would recommend using carbon for these columns. If the intent for these columns is to simply provide confinement then glass fibers would be appropriate and more cost effective.
2. Please clarify if the glass fabric will be used for strengthening or if it is simply acting to provide confinement. If the glass fabric is intended for confinement, what design criteria should be used for design of the materials?

**Answer 1:** This will basically be a confinement wrap at these locations. It is not intended to be pure strengthening in this particular application. However, MoDOT would like it designed based on the equivalent capacity associated with 50% section loss of #4 bars at 1.5" centers for comparison purposes to the carbon wrap.

~ End Addendum 001 ~